EAST Search History

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	2	"6430527".pn.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/13 16:36
L2	1	"6430527".pn. and (longest with prefix with match)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/13 16:43
L3	1	2 and overall	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/13 16:38
L4	0	3 and cascaded	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/13 17:09
L5	1	3 and (network with packet)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/13 16:42
L6	1	5 and (search with engine$1)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/13 16:42
L7	1	3 and network and packet	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/13 16:42
L8	1	7 and search and engine$1	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/13 16:42
L9	1	7 and longest and prefix and match	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/13 17:54

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L10	1	9 and determine	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/13 17:08
L11	2	"6631419".pn.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/13 17:08
L12	1	11 and cascaded	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/13 17:09
L13	1	12 and network	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/13 17:09
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L19	1	18 and match	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/13 17:10

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L21	2	"20050175010".pn.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2007/06/13 17:55

Title:

Parallel asymmetric binary LPM (longest prefix match) search for IP routing lookups

Document Type and Number:
European Patent EP1544757

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Abstract:

Abstract of **EP1544757**
Parallel binary searches on lengths using hash tables is described. The parallel search uses more than one search instance. The search instances probe in parallel mutually different contiguous ranges of a search area during each round of searches. After each round, a new search area is defined and one or more search instances are redeployed into the new search area. The search instance for a range of shorter lengths can be redirected to help those of the longer lengths. Due to the help from other search instances, some ranges can be made large without sacrificing the performance. The invention realizes faster address lookups even for longer address lengths.

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Willibald Doeringer , Günter Karjoth , Mehdi Nassehi, Corrections to "**Routing on longest-matching prefixes**", IEEE/ACM Transactions on Networking (TON), ...
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> <u>Corrections to "**Routing on longest-matching prefixes**"</u>
> 1 Willibald Doeringer , Günter Karjoth , Mehdi Nassehi, **Routing on longest-matching prefixes**, IEEE/ACM Transactions on Networking (TON), v.4 n.1, p.86-97, ...
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<u>**Routing on longest-matching prefixes**</u>
Routing on longest-matching prefixes. Willibald A. Doeringer, Günter Karjoth, Mehdi
Nassehi. Journal Title: IEEE/ACM Transactions on Networking. Date: 1996 ...
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> Karjoth, Mehdi Nassehi. Journal Title: IEEE/ACM Transactions on ...
> wotan.liu.edu/docis/show?doc=dbl/tranet/
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Routing on longest-matching prefixes

Doeringer, W.   Karjoth, G.   Nassehi, M.
FH Worms, Germany;

Abstract

This article describes the dynamic prefix tries, a novel data structure with algorithms for insertion, deletion, and retrieval to build and a dynamic database of binary keys of arbitrary length. These tries extend the concepts of compact digital (Patricia) tries to support t storage of prefixes and to guarantee retrieval times at most linear in the length of the input key irrespective of the trie size, even wh searching for longest-matching prefixes. The new design permits very efficient, simple and nonrecursive implementations of small and minimal storage requirements. Insert and delete operations have strictly local effects, and their particular sequence is irrelevant structure of the resulting trie, thus maintaining at all times the desired storage and computational efficiency. The algorithms have be successfully employed in experimental communication systems and products for a variety of networking functions such as address maintenance and verification of access control lists, and high-performance routing tables in operating system kernels

Index Terms
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access protocols   computer networks   network operating systems   operating system kernels   telecommunication network routing   tree data structures

Non-controlled Indexing
access control lists   address resolution   binary keys   communication systems   compact digital tries   computational efficiency   data structure   deletion   dynamic database   dynamic prefix tries   input key   insertion   longest-matching prefixes   maintenance   minimal storage   networking functions   operating system kernels   retrieval   routing   small code size   verification

Author Keywords
Not Available

References

No references available on IEEE Xplore.

Citing Documents

1   On fast address-lookup algorithms, Tzeng, H.H.-Y.; Przygienda, T.
    Selected Areas in Communications, IEEE Journal on
    On page(s): 1067-1082, Volume: 17, Issue: 6, Jun 1999
    Abstract | Full Text: PDF (256)

2   IP-address lookup using LC-tries, Nilsson, S.; Karlsson, G.
    Selected Areas in Communications, IEEE Journal on
    On page(s): 1083-1092, Volume: 17, Issue: 6, Jun 1999
    Abstract | Full Text: PDF (140)

3   A novel IP-routing lookup scheme and hardware architecture for multigigabit switching routers, Nen-Fu Huang; Shi-Ming Zhao
    Selected Areas in Communications, IEEE Journal on
    On page(s): 1093-1104, Volume: 17, Issue: 6, Jun 1999
    Abstract | Full Text: PDF (364)

4   Cache memory design for Internet processors, Tzi-cker Chiueh; Pradham, P.
Micro, IEEE
On page(s): 28-33, Volume: 20, Issue: 1, Jan/Feb 2000
Abstract | Full Text: PDF (76)

5   An optical interconnection network for terabit IP routers, Chao, H.J.; Ti-Shiang Wang
Lightwave Technology, Journal of
On page(s): 2095-2112, Volume: 18, Issue: 12, Dec 2000
Abstract | Full Text: PDF (396)

6   Efficient construction of multibit tries for IP lookup, Sahni, S.; Kun Suk Kim
Networking, IEEE/ACM Transactions on
On page(s): 650- 662, Volume: 11, Issue: 4, Aug. 2003
Abstract | Full Text: PDF (1048)

7   An O(logn) dynamic router-table design, Sahni, S.; Kim, K.S.
Transactions on Computers
On page(s): 351- 363, Volume: 53, Issue: 3, Mar 2004
Abstract | Full Text: PDF (717)

8   Efficient IP routing table VLSI design for multigigabit routers, Chang, R.C.; Lim, B.-H.
Circuits and Systems I: Regular Papers, IEEE Transactions on [Circuits and Systems I: Fundamental Theory and Applications, Transactions on]
On page(s): 700- 708, Volume: 51, Issue: 4, April 2004
Abstract | Full Text: PDF (544)

9   O(log n) dynamic router-tables for prefixes and ranges, Haibin Lu; Sartaj Sahni
Transactions on Computers
On page(s): 1217- 1230, Volume: 53, Issue: 10, Oct. 2004
Abstract | Full Text: PDF (1384)

10 Enhanced interval trees for dynamic IP router-tables, Haibin Lu; Sahni, S.
Transactions on Computers
On page(s): 1615- 1628, Volume: 53, Issue: 12, Dec. 2004
Abstract | Full Text: PDF (1664)

11 Hardware-Based IP Routing Using Partitioned Lookup Table, Akhbarizadeh, M.J.; Nourani, M.
Networking, IEEE/ACM Transactions on
On page(s): 769- 781, Volume: 13, Issue: 4, Aug. 2005
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Digital Object Identifier 10.1109/TC.2004.116

AbstractPlus | References | Full Text: PDF(1664 KB)   IEEE JNL
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☐ 2. **Fast and scalable schemes for the IP address lookup problem**
Yazdani, N.; Min, P.S.;
High Performance Switching and Routing, 2000. ATM 2000. Proceedings of the IEEE Conference on
26-29 June 2000 Page(s):83 - 92
Digital Object Identifier 10.1109/HPSR.2000.856650

AbstractPlus | Full Text: PDF(824 KB)   IEEE CNF
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☐ 3. **Fast multi-match Lempel-Ziv**
Pinho, M.S.; Finamore, W.A.; Pearlman, W.A.;
Data Compression Conference, 1999. Proceedings. DCC '99
29-31 March 1999 Page(s):545
Digital Object Identifier 10.1109/DCC.1999.785702

AbstractPlus | Full Text: PDF(56 KB)   IEEE CNF
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☐ 4. **An O(logn) dynamic router-table design**
Sahni, S.; Kim, K.S.;
Computers, IEEE Transactions on
Volume 53, Issue 3, Mar 2004 Page(s):351 - 363
Digital Object Identifier 10.1109/TC.2004.1261840

AbstractPlus | Full Text: PDF(717 KB)   IEEE JNL
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☐ 5. **Longest prefix matching using bloom filters**
Dharmapurikar, S.; Krishnamurthy, P.; Taylor, D.E.;
Networking, IEEE/ACM Transactions on
Volume 14, Issue 2, April 2006 Page(s):397 - 409
Digital Object Identifier 10.1109/TNET.2006.872576

AbstractPlus | Full Text: PDF(488 KB)   IEEE JNL
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6. **Dynamic IP router-tables using highest-priority matching**

Lu, H.; Sahni, S.;
Computers and Communications, 2004. Proceedings. ISCC 2004. Ninth International Symposium on
Volume 2, 28 June-1 July 2004 Page(s):858 - 863 Vol.2

AbstractPlus | Full Text: PDF(689 KB)   IEEE CNF
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7. **Prefix and interval-partitioned dynamic IP router-tables**
Haibin Lu; Kim, K.S.; Sahni, S.;
Computers, IEEE Transactions on
Volume 54, Issue 5, May 2005 Page(s):545 - 557
Digital Object Identifier 10.1109/TC.2005.83

AbstractPlus | Full Text: PDF(1536 KB)   IEEE JNL
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8. **A B-tree dynamic router-table design**
Lu, H.; Sartaj Sahni;
Computers, IEEE Transactions on
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Digital Object Identifier 10.1109/TC.2005.104

AbstractPlus | Full Text: PDF(1152 KB)   IEEE JNL
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9. **Parallelisation of trie-based longest prefix matching for fast IP address lookups**
Jaehyung Park; Ikhyeon Jang;
Electronics Letters
Volume 38, Issue 25, 5 Dec. 2002 Page(s):1757 - 1759
Digital Object Identifier 10.1049/el:20021017

AbstractPlus | Full Text: PDF(387 KB)   IET JNL

10. **IP lookups using multiway and multicolumn search**
Lampson, B.; Srinivasan, V.; Varghese, G.;
Networking, IEEE/ACM Transactions on
Volume 7, Issue 3, June 1999 Page(s):324 - 334
Digital Object Identifier 10.1109/90.779199

AbstractPlus | References | Full Text: PDF(176 KB)   IEEE JNL
Rights and Permissions

11. **PCAM: a ternary CAM optimized for longest prefix matching tasks**
Akhbarizadeh, M.J.; Nourani, M.; Vijayasarathi, D.S.; Balsara, P.T.;
Computer Design: VLSI in Computers and Processors, 2004. ICCD 2004. Proceedings. IEEE International Con
on
11-13 Oct. 2004 Page(s):6 - 11
Digital Object Identifier 10.1109/ICCD.2004.1347890

AbstractPlus | Full Text: PDF(1078 KB)   IEEE CNF
Rights and Permissions

12. **Overlapping Hash Trie: A Longest Ppefix First Search Scheme for IPv4/IPv6 Lookup**
Sun, Qiong; Li, Zhenqi_ng; Ma, Yan;
Communication Technology, 2006. ICCT '06. International Conference on
Nov. 2006 Page(s):1 - 4
Digital Object Identifier 10.1109/ICCT.2006.341805

AbstractPlus | Full Text: PDF(4578 KB)   IEEE CNF
Rights and Permissions

13. **O(log n) dynamic router-tables for prefixes and ranges**
Haibin Lu; Sartaj Sahni;
Computers, IEEE Transactions on
Volume 53, Issue 10, Oct. 2004 Page(s):1217 - 1230
Digital Object Identifier 10.1109/TC.2004.81

AbstractPlus | References | Full Text: PDF(1384 KB)   IEEE JNL
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14. **High speed IP address lookup architecture using hashing**
Hyesook Lim; Ji-Hyun Seo; Yeo-Jin Jung;
Communications Letters, IEEE
Volume 7, Issue 10, Oct. 2003 Page(s):502 - 504
Digital Object Identifier 10.1109/LCOMM.2003.818885

AbstractPlus | References | Full Text: PDF(427 KB)   IEEE JNL
Rights and Permissions

15. **Robust routing table design for IPv6 lookup**
Yong, S.M.; Ewe, H.T.;
Information Technology and Applications, 2005. ICITA 2005. Third International Conference on
Volume 1, 4-7 July 2005 Page(s):531 - 536 vol.1
Digital Object Identifier 10.1109/ICITA.2005.241

AbstractPlus | Full Text: PDF(120 KB)   IEEE CNF
Rights and Permissions

16. **A longest prefix first search tree for IP lookup**
Lih-Chyau Wuu; Kuo-Ming Chen; Tzong-Jye Liu;
Communications, 2005. ICC 2005. 2005 IEEE International Conference on
Volume 2, 16-20 May 2005 Page(s):989 - 993 Vol. 2
Digital Object Identifier 10.1109/ICC.2005.1494497

AbstractPlus | Full Text: PDF(254 KB)   IEEE CNF
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17. **High-performance longest prefix matching supporting high-speed incremental updates and guaranteed compression**
Sundstron, M.; Larzon, L.-A.;
INFOCOM 2005. 24th Annual Joint Conference of the IEEE Computer and Communications Societies. Proceec
Volume 3, 13-17 March 2005 Page(s):1641 - 1652 vol. 3
Digital Object Identifier 10.1109/INFCOM.2005.1498446

AbstractPlus | Full Text: PDF(797 KB)   IEEE CNF
Rights and Permissions

18. **Prefix- and Interval-partitioned router-tables [IP routing]**
Haibin Lu; Kun Suk Kim; Sahni, S.;
Global Telecommunications Conference, 2004. GLOBECOM '04. IEEE
Volume 3, 29 Nov.-3 Dec. 2004 Page(s):1590 - 1594 Vol.3
Digital Object Identifier 10.1109/GLOCOM.2004.1378250

AbstractPlus | Full Text: PDF(512 KB)   IEEE CNF
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19. **Efficient multi-match packet classification with TCAM**
Fang Yu; Katz, R.H.;
High Performance Interconnects, 2004. Proceedings. 12th Annual IEEE Symposium on
25-27 Aug. 2004 Page(s):28 - 34
Digital Object Identifier 10.1109/CONECT.2004.1375197

AbstractPlus | Full Text: PDF(821 KB)   IEEE CNF
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20. **A B-tree dynamic router-table design**
Lu, H.; Sahni, S.;
Computers and Communications, 2004. Proceedings. ISCC 2004. Ninth International Symposium on
Volume 2, 28 June-1 July 2004 Page(s):840 - 845 Vol.2

AbstractPlus | Full Text: PDF(667 KB)   IEEE CNF
Rights and Permissions

21. **Data structures for one-dimensional packet classification using most-specific-rule matching**
Sahni, S.; Kun Suk Kim; Haibin Lu;
Parallel Architectures, Algorithms and Networks, 2002. I-SPAN '02. Proceedings. International Symposium on
22-24 May 2002 Page(s):1 - 12
Digital Object Identifier 10.1109/ISPAN.2002.1004254

AbstractPlus | Full Text: PDF(348 KB)   IEEE CNF

22. **A CAM/WTA-Based High Speed and Low Power Longest Prefix Matching Circuit Design**
Tsai, Ruei-Jhe; Ting, Hsin-Wen; Lin, Chi-Sheng; Liu, Bin-Da;
Circuits and Systems, 2006. APCCAS 2006. IEEE Asia Pacific Conference on
4-7 Dec. 2006 Page(s):426 - 429
Digital Object Identifier 10.1109/APCCAS.2006.342480

AbstractPlus | Full Text: PDF(3948 KB)   IEEE CNF

23. **A fast and compact longest match prefix look-up method using pointer cache for very long network adc**
Uga, M.; Shiomoto, K.;
Computer Communications and Networks, 1999. Proceedings. Eight International Conference on
11-13 Oct. 1999 Page(s):595 - 602
Digital Object Identifier 10.1109/ICCCN.1999.805579

AbstractPlus | Full Text: PDF(668 KB)   IEEE CNF

24. **Routing on longest-matching prefixes**
Doeringer, W.; Karjoth, G.; Nassehi, M.;
Networking, IEEE/ACM Transactions on
Volume 4, Issue 1, Feb. 1996 Page(s):86 - 97
Digital Object Identifier 10.1109/90.503764

AbstractPlus | Full Text: PDF(1064 KB)   IEEE JNL

25. **Chisel: A Storage-efficient, Collision-free Hash-based Network Processing Architecture**
Cadambi, S.; Chakradhar, S.; Hasan, J.; Jakkula, V.;
Computer Architecture, 2006. ISCA '06. 33rd International Symposium on
2006 Page(s):203 - 215
Digital Object Identifier 10.1109/ISCA.2006.14

AbstractPlus | Full Text: PDF(440 KB)   IEEE CNF

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↑ REFERENCES

Note: OCR errors may be found in this Reference List extracted from the full text article. ACM has opted to expose the complete List rather than only correct and linked references.

1   Arne Andersson, Comments on "On the balance property of Patricia tries: external path length viewpoint", Theoretical Computer Science, v.106 n.2, p.391-393, Dec. 1992

2   Jun-ichi Aoe , Katsushi Morimoto , Takashi Sato, An efficient implementation of trie structures, Software—Practice & Experience, v.22 n.9, p.695-721, Sept. 1992

3   ATM Forum, PNNI Draft Specification, 1995. Version 94-0471R10.

4   S. Bradner and A. Mankin, The recommendation for the IP next generation protocol, RFC 1752, NIC, 1995.

5   Douglas Comer, Internetworking with TCP/IP: principles, protocols, and architecture, Prentice-Hall, Inc., Upper Saddle River, NJ, 1988

6   D. Pozefsky , R. Turner , A. K. Edwards , S. Sarkar , J. Mathew , G. Bollella , K. Tracey , D. Poirier , J. Fetvedt , W. S. Hobgood , W. A. Doeringer , D. Dykerman, Multiprotocol transport networking: eliminating application dependencies on communications protocols, IBM Systems Journal, v.34 n.3, p.472-500, 1995

7   W. Doeringer, D. Dykeman, M, Peters, H. Sandick, and K. Vu, "Efficient, real-time address resolution in networks of arbitrary topology," in Proc. 1st LAN Conf., 1993, pp. 183-191.

8   W. Doeringer and M. Nassehi, "A new standard for address resolution," submitted to IEEE Commun. Mag. Special Issue Enterprise Networking, 1995.

9   John A. Dundas, III, Implementing dynamic minimal-prefix tries, Software—Practice &

Experience, v.21 n.10, p.1027-1040, Oct. 1991

10   G. H. Gonnet , R. Baeza-Yates, Handbook of algorithms and data structures: in Pascal and C (2nd ed.), Addison-Wesley Longman Publishing Co., Inc., Boston, MA, 1991

11   ISO/IEC, Intermediate System to Intermediate System Inter-Domain Routeing Exchange Protocol, 1992, DIS 10747.

12   ISO/OSI, Network Service Definition, Addendum 2: Network Layer Addressing, 1988, DIS 8348, Add.2.

13· OSI Routeing Framework, 1989, DIS 9575.

14   Intermediate System to Intermediate System Intra-domain Routeing Protocol for Use in Conjunction with the Protocol for Providing Connectionless-mode Network Service (1SO 8473), 1990, DIS i 0589.

15   Peter Kirschenhofer , Helmut Prodinger , Wojciech Szpankowski, Do We Really Need to Balance Patricia Trees? (Extended Abstract), Proceedings of the 15th International Colloquium on Automata, Languages and Programming, p.302-316, July 11-15, 1988

16   Peter Kirschenhofer , H. Prodinger , Wojciech Szpankowski, On the balance property of Patricia tries: external path length viewpoint, Theoretical Computer Science, v.68 n.1, p.1-17, Oct. 16, 1989

17   D. E. Knuth, "Optimum binary search trees," Acta inJbrmatica, vol. 1, pp. 14-25, 1971.

18   The Art of Computer Programming, vol. 3. Sorting and Searching. Reading, MA: Addison-Wesley, 1991.

19. K. Lougheed and Y. Rekhter, Border gateway protocol (BGP), RFC 163, NIC, 1990.

20   T.X. Merrett and B. Fayerman, "Dynamic Patricia," in Proc. Int. Conf. Foundations Data Org., Kyoto, Japan, 1985, pp. 13-20.

21   Donald R. Morrison, PATRICIA—Practical Algorithm To Retrieve Information Coded in Alphanumeric, Journal of the ACM (JACM), v.15 n.4, p.514-534, Oct. 1968

22   P. Robinson, Suggestion for a new class of IP addresses, REX? 1375, NIC, 1992.

23· T.-B. Pei and C. Zukowski, "Putting routing tables in silicon," IEEE Network Mag., pp. 42-50, Jan. 1992.

24   Radia Perlman, Interconnections: bridges and routers, Addison Wesley Longman Publishing Co., Inc., Redwood City, CA, 1992

25   William Pugh, Skip lists: a probabilistic alternative to balanced trees, Communications of the ACM, v.33 n.6, p.668-676, June 1990

26   Yakov Rekhter, Forwarding database overhead for inter-domain routing, ACM SIGCOMM Computer Communication Review, v.23 n.1, p.66-81, Jan. 1993

27   Daniel Dominic Sleator , Robert Endre Tarjan, Self-adjusting binary search trees, Journal of the ACM (JACM), v.32 n.3, p.652-686, July 1985

28   W. Szpankowski, "How much on the average is the Patricia trie better?" in Proc. Allerton Conf., 1986, pp. 314-323.

↑ **CITED BY** *15*

Willibald Doeringer , Günter Karjoth , Mehdi Nassehi, Corrections to "Routing on longest-matching prefixes", IEEE/ACM Transactions on Networking (TON), v.5 n.4, p.600, Aug. 1997

Woei-Luen Shyu , Cheng-Shong Wu , Ting-Chao Hou, Aligned prefix caching based on

singleton information, Computer Networks and ISDN Systems, v.47 n.6, p.871-884, 22 April 2005

Tzi-cker Chiueh , Prashant Pradhan, Cache Memory Design for Internet Processors, IEEE Micro, v.20 n.1, p.28-33, January 2000

Kartik Gopalan , Tzi-cker Chiueh, Improving route lookup performance using network processor cache, Proceedings of the 2002 ACM/IEEE conference on Supercomputing, p.1-10, November 16, 2002, Baltimore, Maryland

Haibin Lu , Sartaj Sahni, A B-Tree Dynamic Router-Table Design, IEEE Transactions on Computers, v.54 n.7, p.813-824, July 2005

H. Arafat Ali , A. I. El-Desouky , M. F. Ared, An IP packet forwarding technique based on a new structure of lookup table, International Journal of Computers and Applications, v.28 n.2, p.112-121, April 2006

Haibin Lu , Kun Suk Kim , Sartaj Sahni, Prefix and Interval-Partitioned Dynamic IP Router-Tables, IEEE Transactions on Computers, v.54 n.5, p.545-557, May 2005

Mikael Degermark , Andrej Brodnik , Svante Carlsson , Stephen Pink, Small forwarding tables for fast routing lookups, ACM SIGCOMM Computer Communication Review, v.27 n.4, p.3-14, Oct. 1997

Sartaj Sahni , Kun Suk Kim, Efficient construction of multibit tries for IP lookup, IEEE/ACM Transactions on Networking (TON), v.11 n.4, p.650-662, August 2003

Sartaj Sahni , Kun Suk Kim, An O(log n) Dynamic Router-Table Design, IEEE Transactions on Computers, v.53 n.3, p.351-363, March 2004

Steven Lin , Nick McKeown, A simulation study of IP switching, ACM SIGCOMM Computer Communication Review, v.27 n.4, p.15-24, Oct. 1997

Mohammad J. Akhbarizadeh , Mehrdad Nourani, Hardware-based IP routing using partitioned lookup table, IEEE/ACM Transactions on Networking (TON), v.13 n.4, p.769-781, August 2005

Haibin Lu , Sartaj Sahni, O(\log n) Dynamic Router-Tables for Prefixes and Ranges, IEEE Transactions on Computers, v.53 n.10, p.1217-1230, October 2004

Adam L. Buchsbaum , Glenn S. Fowler , Balachannder Kirishnamurthy , Kiem-Phong Vo , Jia Wang, Fast prefix matching of bounded strings, Journal of Experimental Algorithmics (JEA), 8, 2003

Haibin Lu , Sartaj Sahni, Enhanced Interval Trees for Dynamic IP Router-Tables, IEEE Transactions on Computers, v.53 n.12, p.1615-1628, December 2004

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